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United States
Department of
Agriculture

Soil
Conservation
Service

Bozeman,
Montana



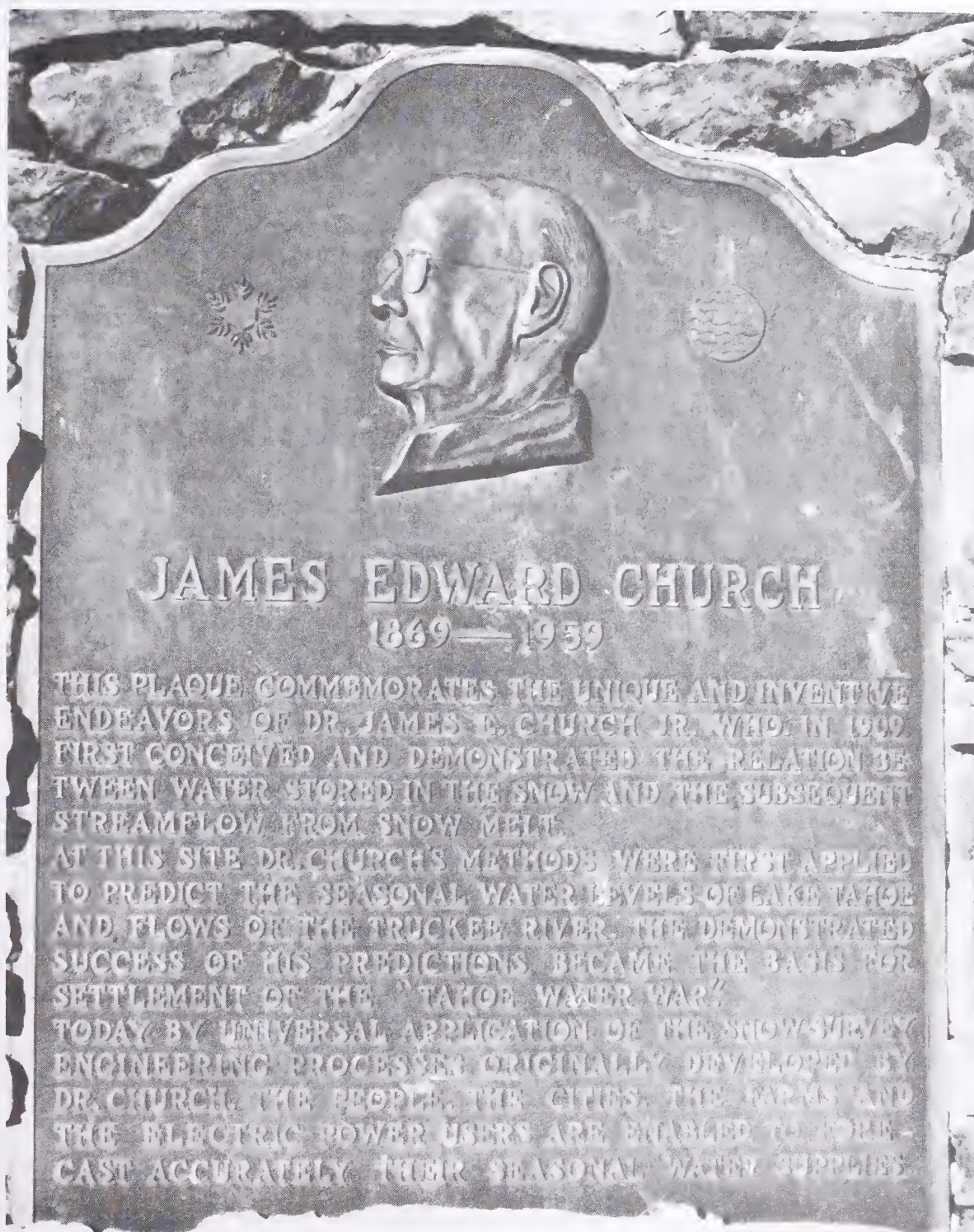
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Montana Water Supply Outlook

March 1, 1989

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Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

An error is associated with each forecast, and this error decreases as the season progresses and more data becomes available. To express the range of error that can be expected, "most probable" forecasts are issued along with a range representing a "reasonable minimum" and a "reasonable maximum". Actual streamflow can be expected to fall within this range in eight out of ten years. Additionally two specific scenarios are provided based on the assumption that subsequent precipitation will be "wet", above average, or "dry", below average.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola Ave., Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Building A, 3rd floor, Denver, CO 80211
Idaho	3244 Elder Street, Room 124, Boise, ID 83705
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 87102-3157
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	W. 920 Riverside, Room 360, Spokane, WA 99201-1080
Wyoming	Federal Building, 100 "B" Street, Room 3124, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.

Water supply reports published by other agencies:

California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

Montana Water Supply Outlook

and

Federal - State - Private Cooperative Snow Surveys

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Programs and assistance of the United States Department of Agriculture are available without regard to race, creed, color, sex, age, or national origin.

ON THE COVER:

This plaque on the outlet gate at Lake Tahoe, Nevada, commemorates the start of snow surveys in 1909.

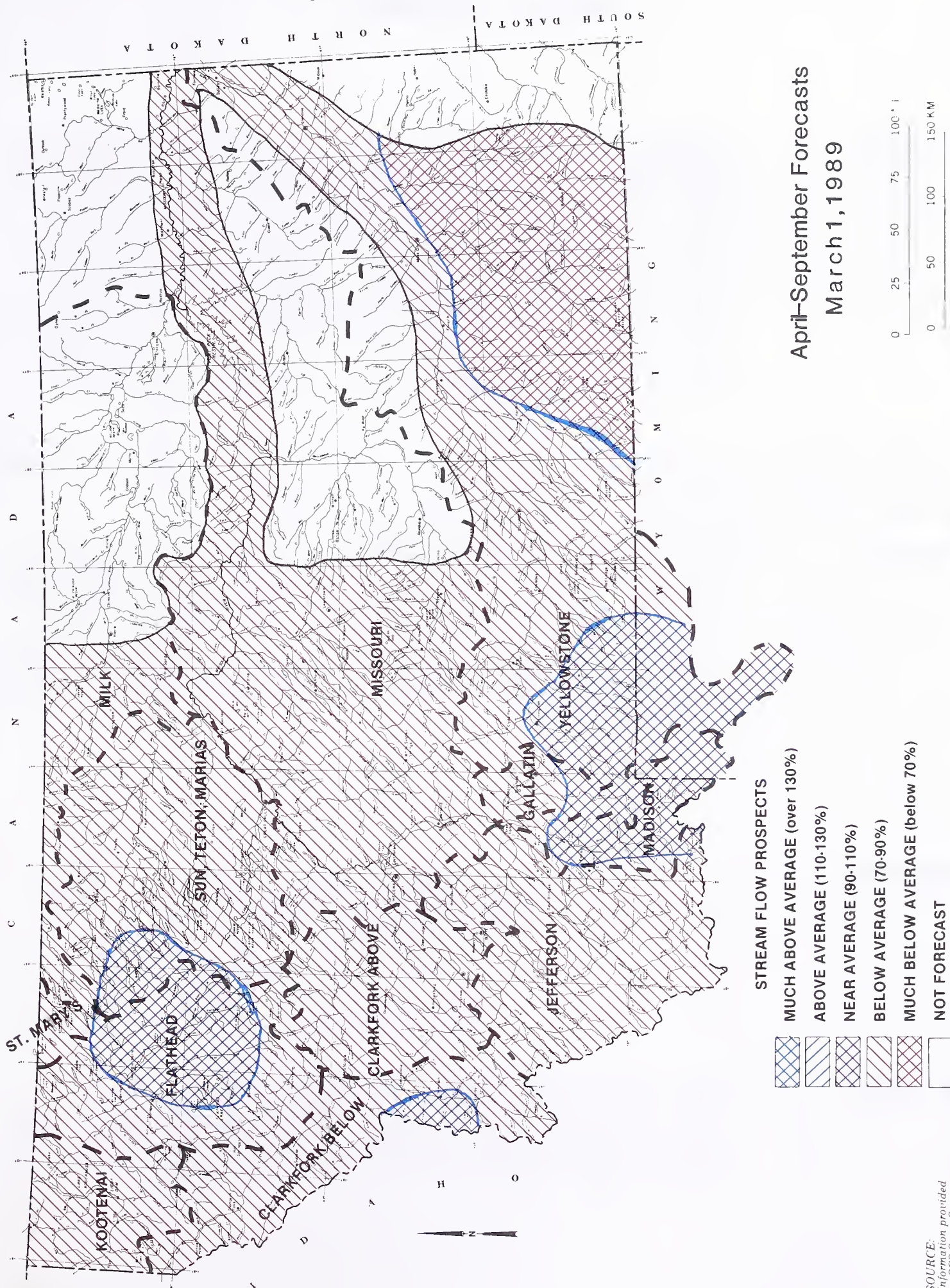
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STREAMFLOW PROSPECTS FOR MONTANA

Spring and Summer Period

April-September Forecasts
March 1, 1989



SOURCE:
Information provided
by SCS Soil Survey
Personnel

General Outlook

Summary

Most drainages received below average to well below average mountain precipitation during February. Snowpacks are below average over most of the State. However, there are some areas that have near average snowpack. Snowpack percentages are 5 to 10 percent less than those reported on February 1. Soils under the snowpack continue to be drier than normal. Some snowmelt will be required to recharge these soils before runoff can begin. Most streamflow forecasts are little lower than those issued last month. Headwater areas near Yellowstone National Park should generate near average streamflows. Well below average flows are forecast for streams flowing into Montana from Wyoming.

Snowpack

The snowpack is slightly below average statewide. In most areas, the snowpack is in the 80 to 95 percent of average range. The Gallatin River Drainage and the Bear Paw Mountains have below average snowpack. The best snowpacks are in the Swan and Mission Mountain Ranges, areas in and near Yellowstone National Park and areas along the Continental Divide in the headwaters of the Bitterroot River, south of Butte and west of Helena.

Precipitation

February mountain precipitation was well below average over most of the drainages in Montana. Only the Missouri and Yellowstone Basins had accumulations of 80 to 90 percent of average.

Reservoirs

Most irrigation reservoirs reported below average storage. However, some in the St. Mary, Marias, Sun and Yellowstone drainages have near to above average storage. Most large multipurpose reservoirs have below average storage.

Streamflow

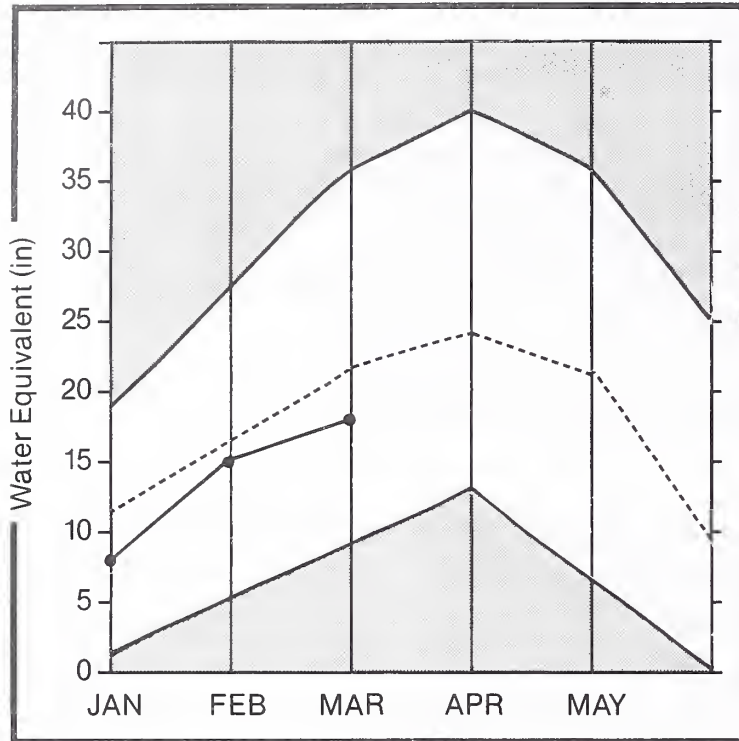
Most streamflows are forecast to be a little below average and have generally decreased from those issued on February 1. The headwaters of the Madison and Yellowstone Rivers are expected to have near average levels. The Milk, Little Bighorn, Tongue and Powder Rivers are forecast to have flow much below average. In all areas except for streams flowing out of Wyoming, runoff is still expected to be more than was observed last season.

Soil Moisture

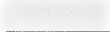
Soils under the snowpack are drier than usual over most of the State. Some of this spring's snowmelt will be required to recharge these soils before runoff can begin. In general, mountain soils in the northwestern part of Montana are a little wetter than in other areas.

Kootenai Basin

Mountain snowpack* (inches)

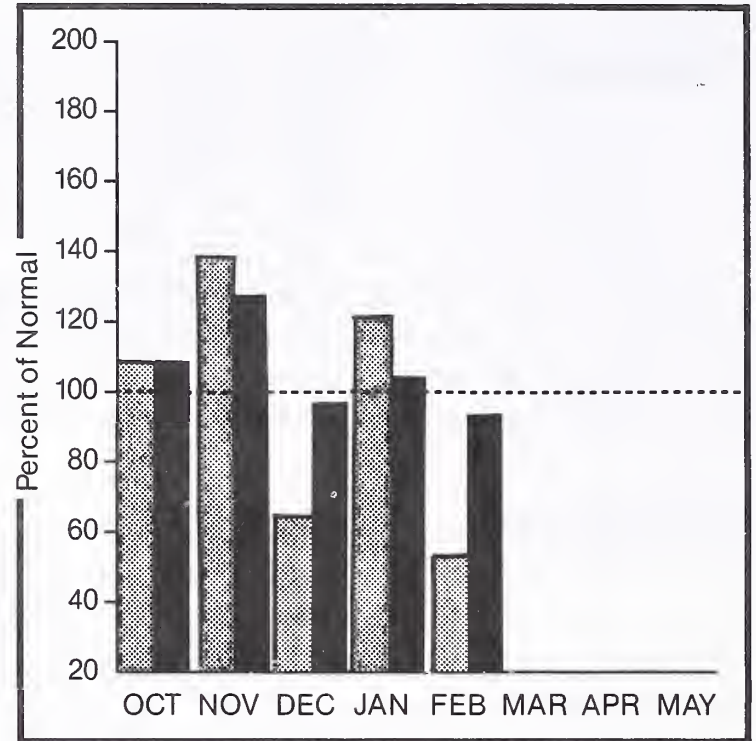


*Kootenai in Montana

Maximum 
Minimum 

Average 
Current 

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation 

Year to date precipitation 

Water Supply Outlook

Mountain precipitation was well below average for February. This resulted in a small decrease in the basin-wide snowpack percentages since February 1. The snowpack on March 1 is below average in both British Columbia and Montana. Spring and summer streamflow is expected to be below average.

For more information contact your local Soil Conservation Service Office.

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

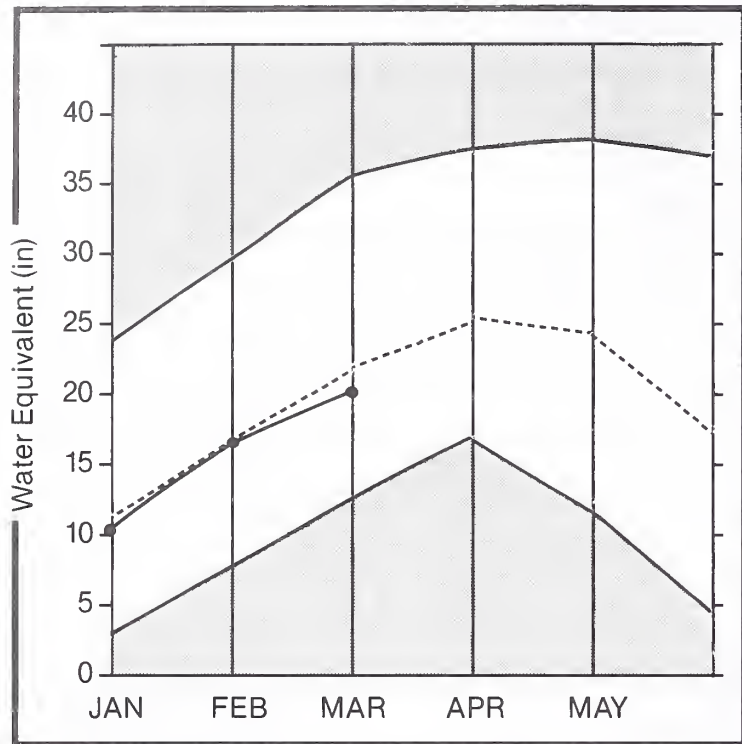
FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
KOOTENAI bl Libby Dam (2)	APR-JUL	5110	87			6290	3930	5885
	APR-SEP	5990	87			7370	4610	6903
FISHER nr Libby	APR-JUL	195	81	230	159	255	133	240
	APR-SEP	210	82	240	172	275	143	256
YAAK nr Troy	APR-JUL	385	78	445	325	515	255	494
	APR-SEP	410	79	460	365	545	275	517
KOOTENAI at Leonia (2)	APR-JUL	6470	88			7940	5000	7340
	APR-SEP	7440	88			9130	5750	8441

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	% OF AVERAGE
LAKE KOOCANUSA	5748.0	1390.0	1393.0	1998.0	EAST KOOTENAI in B.C.	28	137	95
					KOOTENAI in MONTANA	31	136	81
					KOOTENAI ab BONNERS FERRY	58	136	87

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
 REAS. MAX. and REAS. MIN. forecasts are for 10% and 90% exceedance levels with the exception of (1) below.
 (1) - REAS. MAX. and REAS. MIN. forecasts are for 5% and 95% exceedance levels.
 (2) - Corrected for upstream diversions or changes in reservoir storage.

Flathead Basin

Mountain snowpack* (inches)

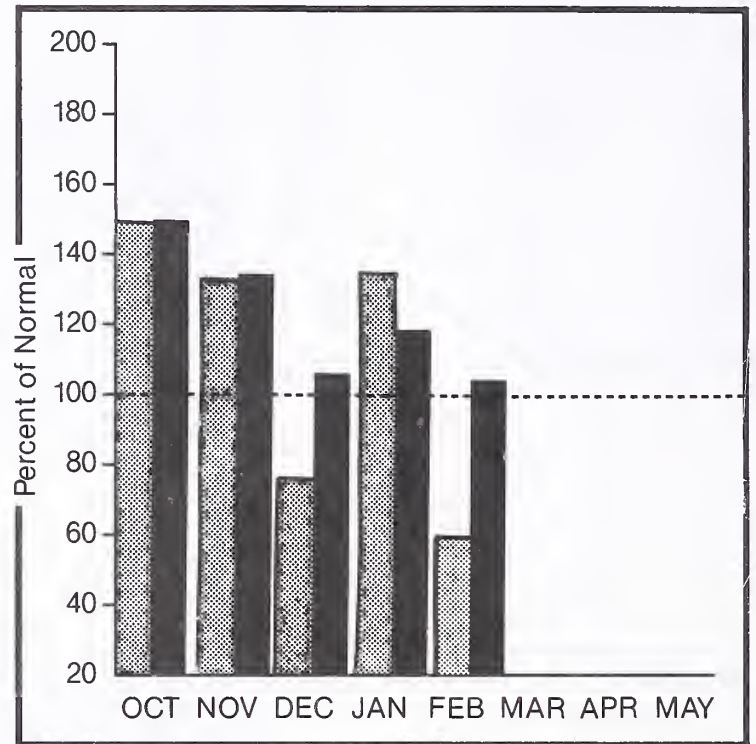


*Flathead

Maximum 
Minimum 

Average 
Current 

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation 

Year to date precipitation 

Water Supply Outlook

Mountain precipitation was about 60 percent of average for February. This decreased the mountain snowpack to below average in the more northern drainages. The Swan and Mission Mountains have snowpack near average. Spring and summer runoff is forecast to be 5 to 10 percent below average.

For more information contact your local Soil Conservation Service Office.

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

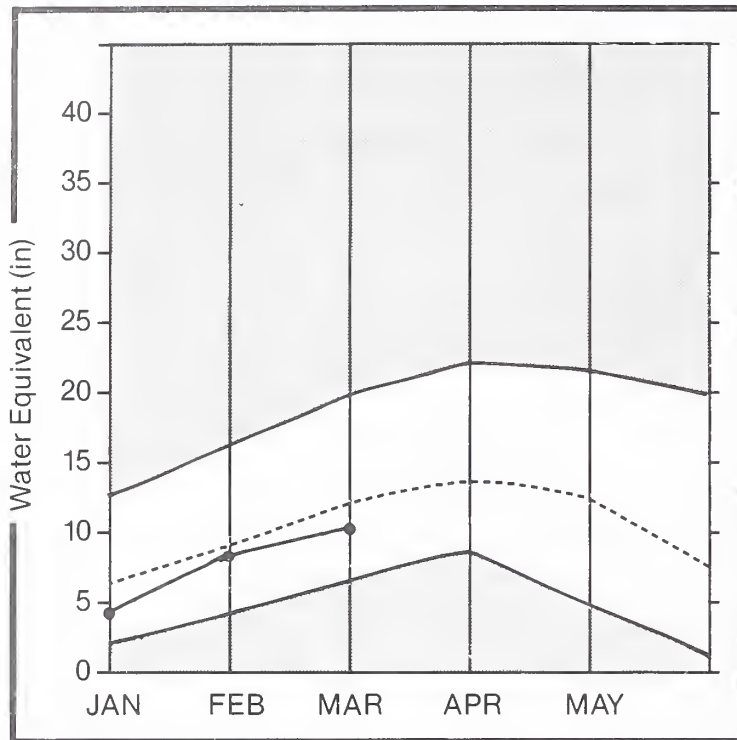
FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
NF FLATHEAD nr Columbia Falls	APR-JUL	1500	88	1640	1360	1770	1230	1701
	APR-SEP	1660	88	1770	1550	1960	1360	1880
MF FLATHEAD nr West Glacier	APR-JUL	1530	91	1650	1410	1800	1260	1680
	APR-SEP	1670	91	1800	1520	1960	1380	1836
SF FLATHEAD nr Columbia Falls (1)	APR-JUL	1960	93	2130	1770	2450	1470	2110
	APR-SEP	2080	93	2260	1900	2600	1560	2248
FLATHEAD at Columbia Falls (1)	APR-JUL	5130	91	5470	4680	6310	3950	5621
	APR-SEP	5580	91	5950	5150	6860	4300	6114
SWAN nr Bigfork	APR-JUL	580	97	610	550	675	485	597
	APR-SEP	655	96	680	620	765	545	683
FLATHEAD nr Polson (2)	APR-JUL	6110	93	6510	5710	7160	5060	6586
	APR-SEP	6640	93	7000	6210	7780	5500	7150

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVG.			
CAMAS (4)	45.2	6.2	14.9	21.7	NORTH FORK FLATHEAD	16	148 89
MISSION VALLEY (8)	100.0	21.8	28.2	38.4	MIDDLE FORK FLATHEAD	11	130 84
HUNGRY HORSE	3451.0	1296.0	1400.0	2257.0	SOUTH FORK FLATHEAD	13	131 92
FLATHEAD LAKE	1791.0	774.0	889.0	901.0	STILLWATER-WHITEFISH	9	145 87
					SWAN	12	139 98
					LITTLE BITTERROOT	7	138 80
					FLATHEAD	48	139 90

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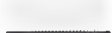
Clark Fork Basin above Missoula

Mountain snowpack* (inches)



*Clark Fork above Missoula

Maximum



Average



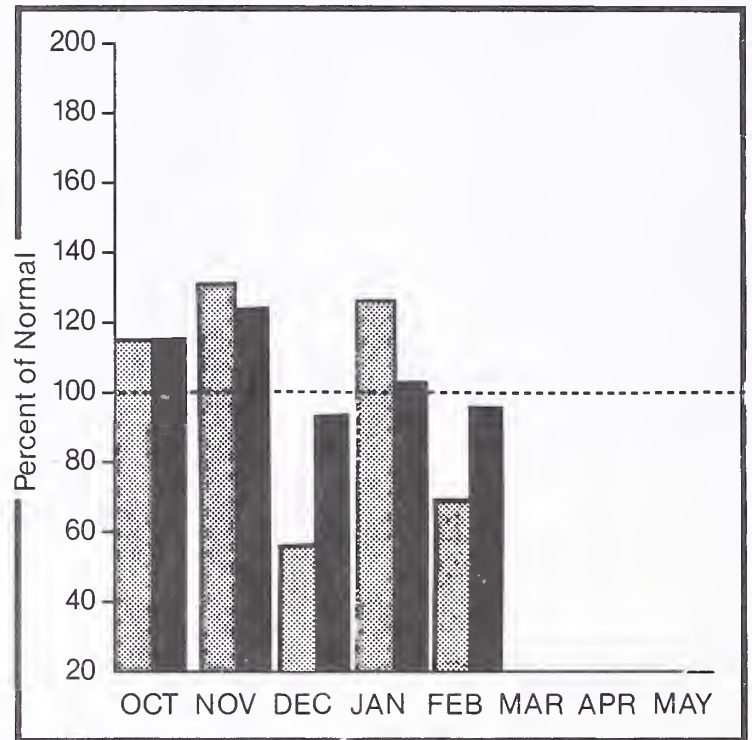
Minimum



Current



Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation



Year to date precipitation



Water Supply Outlook

Mountain precipitation was below average for February. The snowpack is now slightly below average in the Clark Fork Headwaters and the Blackfoot River Drainage. Spring and summer runoff is forecast to be below average.

For more information contact your local Soil Conservation Service Office.

CLARK FORK RIVER BASIN above Missoula

STREAMFLOW FORECASTS

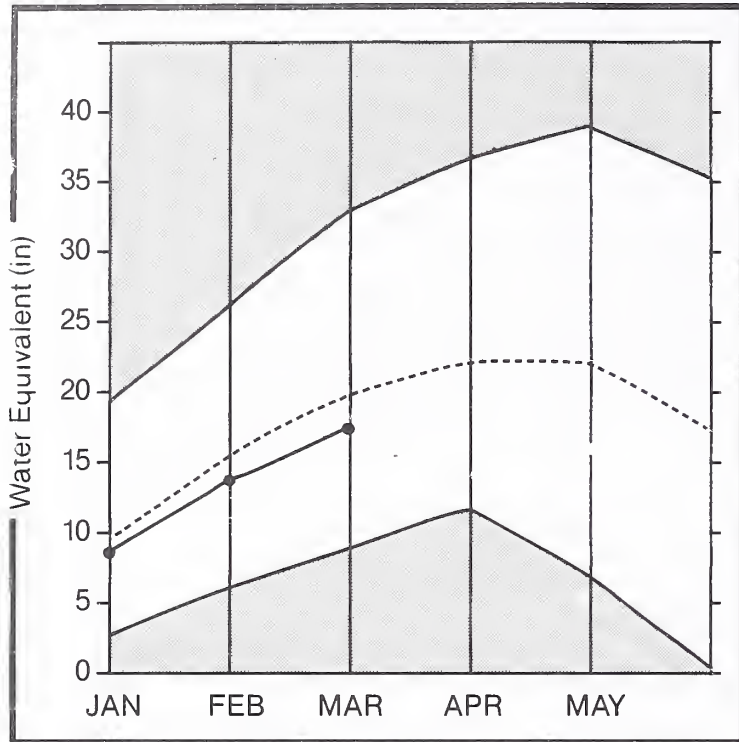
FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
MOULTON RESERVOIR inflow (2)	APR-JUN	190	80	225	152	250	128	237
	APR-JUL	210	80	255	165	280	142	263
WARM SPRINGS CK nr Anaconda (2)	APR-JUL	30	77	35	25	40	19.9	39
	APR-SEP	37	76	43	32	50	24	49
FLINT CK nr Southern Cross (2)	APR-JUL	11.7	80	16.0	7.4	17.0	6.4	14.8
	APR-SEP	13.7	77	19.0	8.4	20	7.3	17.8
FLINT CK bl Boulder Ck (2)	APR-JUL	49	80	65	33	71	27	61
	APR-SEP	62	79	81	44	90	34	78
LOWER WILLOW CK RES inflow (2)	APR-JUL	12.7	85	17.9	7.3	18.1	7.3	14.9
	APR-SEP	14.1	89	19.0	9.2	19.8	8.4	15.8
MF ROCK CK nr Philipsburg	APR-JUL	60	87	70	51	78	42	69
	APR-SEP	66	86	77	58	86	46	77
NEVADA CK nr Finn	APR-JUL	16.8	80	21	11.8	24	9.2	21
	APR-SEP	18.1	82	23	12.8	26	10.2	22
BLACKFOOT nr Bonner	APR-JUL	795	91	910	680	935	655	874
	APR-SEP	880	91	985	775	1040	725	969
CLARK FORK ab Milltown (2)	APR-JUL	610	87	730	490	835	385	703
	APR-SEP	700	86	830	570	960	440	812
CLARK FORK ab Missoula	APR-JUL	1400	89	1640	1160	1810	990	1577
	APR-SEP	1580	89	1790	1330	2040	1120	1781

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **	THIS YEAR	LAST YEAR	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
GEORGETOWN LAKE	31.0	25.4	26.5	25.7	CLARK FORK ab BLACKFOOT	43	116 85
LOWER WILLOW CREEK	4.9	1.0	1.4	1.7	BLACKFOOT	22	128 96
NEVADA CREEK	12.6	1.2	0.8	5.2	CLARK FORK ab MISSOULA	59	121 89

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Clark Fork Basin below Missoula

Mountain snowpack* (inches)

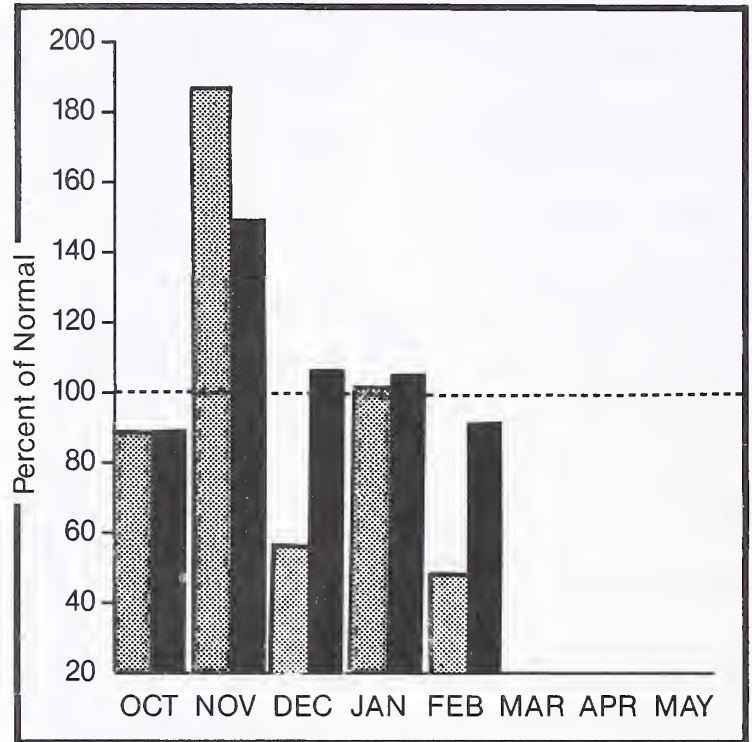


*Bitterroot

Maximum —
Minimum —

Average - - -
Current ●—●

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation 
Year to date precipitation 

Water Supply Outlook

Mountain precipitation for February was about one-half of average. The snowpack percentages decreased about 10 percent during the month. The snowpack is below average on both the Bitterroot and Clark Fork River below Missoula. Streamflow is forecast to be 5 to 10 percent below average.

For more information contact your local Soil Conservation Service Office.

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

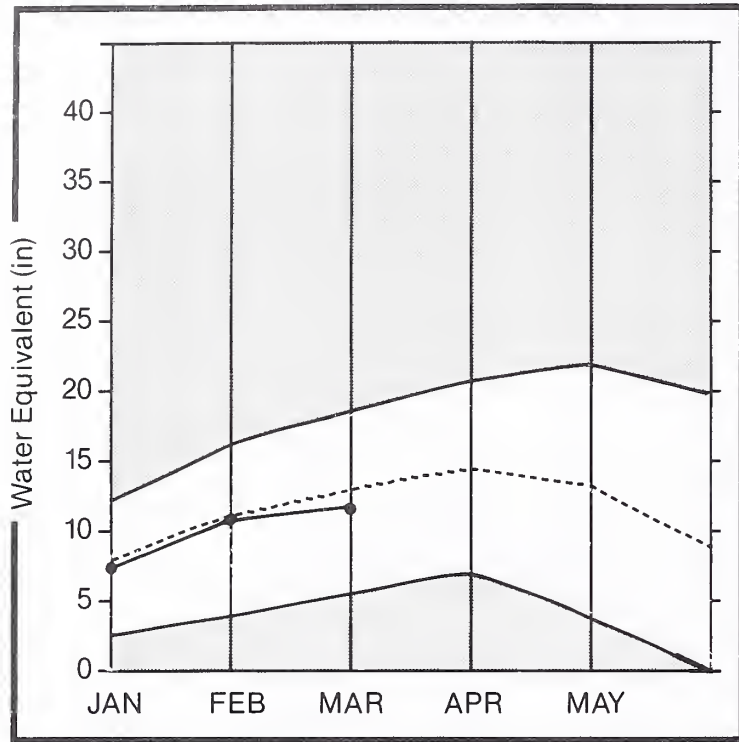
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CLARK FORK ab Missoula	APR-JUL APR-SEP	1400 1580	89 89	1640 1790	1160 1330	1810 2040	990 1120	1577 1781
WF BITTERROOT nr Conner (2)	APR-JUL APR-SEP	130 150	88 89	161 179	99 121	168 194	92 106	147 169
BITTERROOT nr Darby	APR-JUL APR-SEP	480 525	92 92	575 615	385 435	615 675	345 375	524 573
ROCK CK nr Darby	APR-SEP	78	93			93	63	84
SKALKAHO CK nr Hamilton	APR-JUL APR-SEP	41 47	89 87	48 55	35 41	48 56	34 38	46 54
BURNT FORK CK nr Stevensville (2)	APR-JUL APR-SEP	27 31	84 82	31 35	24 28	35 41	18.7 21	32 38
BITTERROOT at Missoula (2)	APR-JUL APR-SEP	1240 1350	90 90	1380 1500	1090 1200	1580 1740	885 960	1371 1497
CLARK FORK b1 Missoula	APR-JUL APR-SEP	2640 2920	90 89	2990 3250	2290 2560	3140 3510	2110 2330	2948 3276
CLARK FORK at St. Regis	APR-JUL APR-SEP	3450 3820	89 88			4700 5200	2200 2440	3894 4325
CLARK FORK nr Plains (2)	APR-JUL APR-SEP	9640 10600	89 89			12100 13300	7250 7980	10850 11930
THOMPSON nr Thompson Falls	APR-JUL APR-SEP	170 195	77 78	190 215	150 178	225 255	117 135	222 250
PROSPECT CK at Thompson Falls	APR-JUL APR-SEP	102 111	80 81	111 118	93 104	135 147	69 75	128 137
CLARK FORK at Whitehorse Rapids (2)	APR-JUL APR-SEP	10700 11800	88 88			13500 14900	7910 8720	12150 13370

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE THIS YEAR	LAST YEAR	** AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
PAINTED ROCKS LAKE	31.7	0.0	0.0	14.7	CLARK FORK ab MISSOULA	59	121 89
NOXON RAPIDS	335.0	260.5	321.6	297.6	BITTERROOT	24	108 87
COMO	34.9	10.9	5.7	13.4	LWR CLARK FK b1 MISSOULA	23	124 82
					BITTERROOT & LWR C.F.	45	116 84
					CLARK FORK TOTAL	99	119 86
					FLATHEAD	47	139 91
					PEND OREILLE	140	125 87

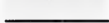
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Jefferson Basin

Mountain snowpack* (inches)

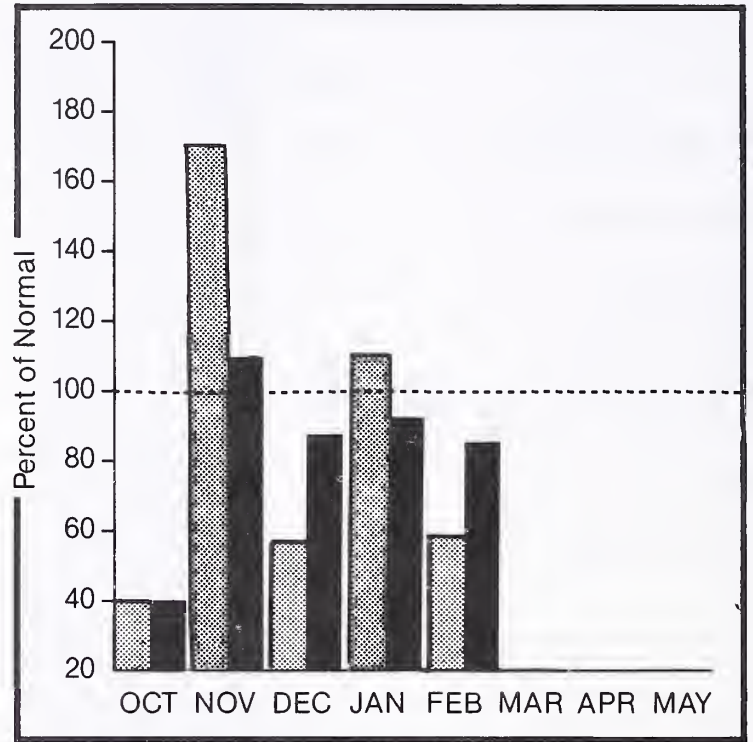


* Jefferson

Maximum 
Minimum 

Average 
Current 

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation  Year to date precipitation 

Water Supply Outlook

February mountain precipitation was well below average. The snowpack in the Red Rock River Drainage is average while the remainder of the basin is below average. Snowpack percentages have decreased over most of the watershed since February 1. Forecasts for April through September runoff are for below average flows throughout the basin.

For more information contact your local Soil Conservation Service Office.

JEFFERSON RIVER BASIN

STREAMFLOW FORECASTS

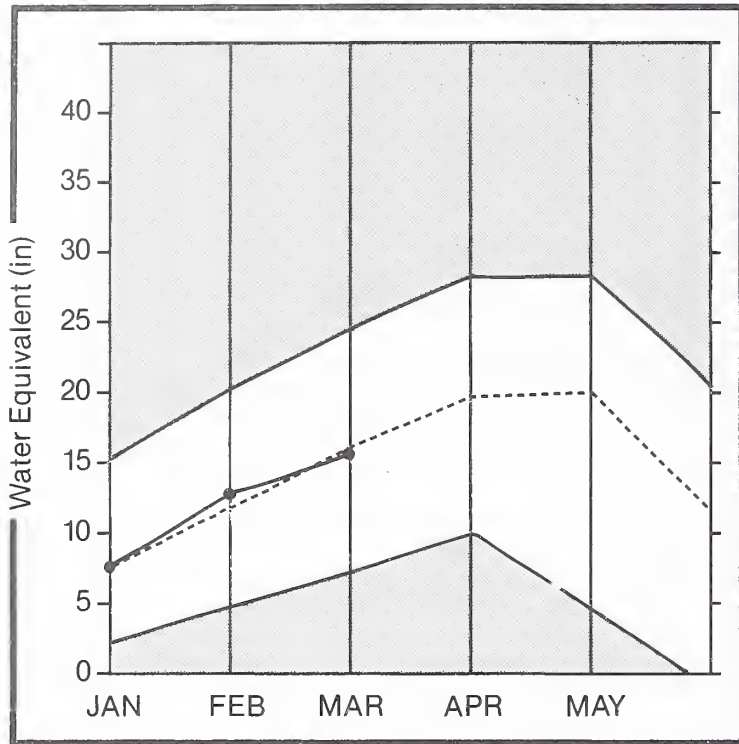
FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
RED ROCK RIVER near Monida 2	APR-JUL APR-SEP	90 97	86 85	122 137	62 57	126 136	54 58	105 114
BEAVERHEAD RIVER near Grant 2	APR-JUL APR-SEP	120 139	81 79	220 260	54 67	171 199	69 80	149 175
BEAVERHEAD RIVER at Barratts 2	APR-JUL APR-SEP	154 178	80 79	260 305	87 104	220 255	89 102	192 224
RUBY RIVER near Alder	APR-JUL APR-SEP	68 83	76 78	95 113	42 53	96 117	40 49	89 106
BIG HOLE RIVER near Melrose	APR-JUL APR-SEP	515 570	74 75	780 860	250 275	725 795	305 345	696 757
WILLOW CREEK near Harrison	APR-JUL APR-SEP	14.6 16.3	78 78	28 31	6.9 7.7	21 24	7.9 8.7	18.7 21
BOULDER RIVER near Boulder	APR-JUL APR-SEP	80 86	88 89	133 139	28 33	107 115	53 57	91 97
JEFFERSON RIVER near Three Forks	APR-JUL APR-SEP	740 830	71 72	1300 1440	220 275	1080 1210	395 450	1042 1156

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	% OF AVERAGE
LIMA	84.0	11.0	13.1	37.5	BEAVERHEAD	34	143	100
CLARK CANYON	255.6	107.0	170.7	146.1	RUBY	13	130	90
RUBY RIVER		NO REPORT			BIGHOLE	28	121	87
					BOULDER	15	123	86
					JEFFERSON	72	133	94

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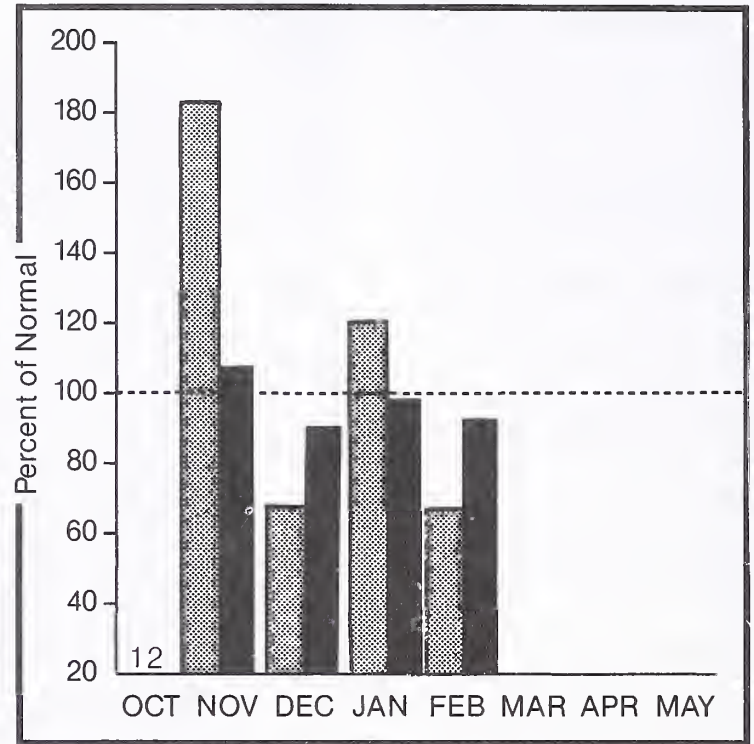
Madison Basin

Mountain snowpack* (inches)



*Madison

Precipitation* (percent of normal)



*Based on selected stations

Maximum 
Minimum 

Average 
Current 

Monthly precipitation 
Year to date precipitation 

Water Supply Outlook

Mountain precipitation for February was well below average over the basin. The snowpack in the upper basin remains above average while a little below average in the lower part. The forecasts have decreased slightly but spring and summer runoff is still expected to be near average in the upper basin and a little less downstream.

For more information contact your local Soil Conservation Service Office.

MADISON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
MADISON RIVER near Grayling 2	APR-JUL	395	101	485	300	465	325	390
	APR-SEP	500	100	610	390	590	410	499
MADISON RIVER near McAllister 2	APR-JUL	655	96	860	450	775	535	680
	APR-SEP	810	95	1020	585	965	655	856

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
ENNIS LAKE	41.0	30.8	30.7	34.8	MADISON above HEBGEN	16	146 109
HEBGEN LAKE	377.5	263.2	275.2	235.3	LOWER MADISON	21	124 86
					MADISON	37	136 98

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.

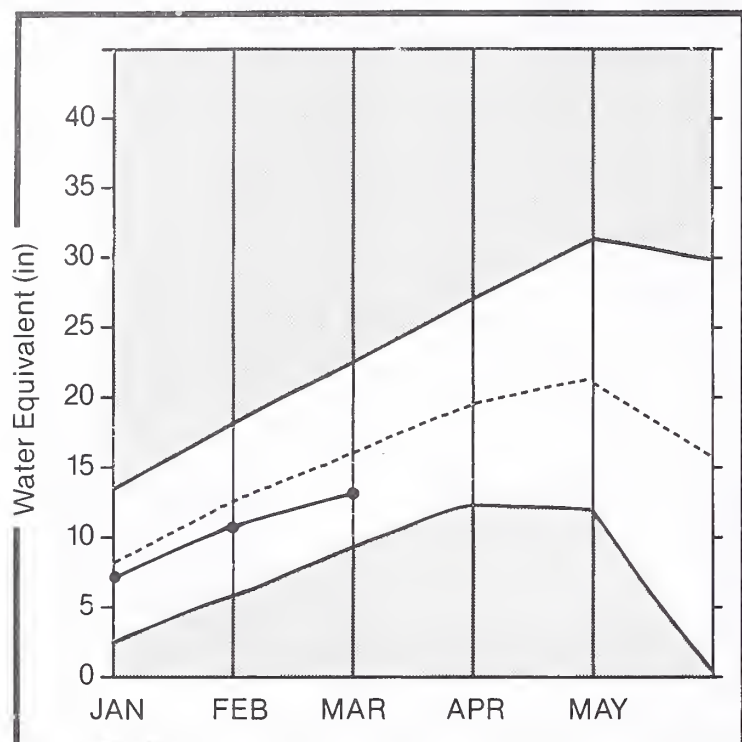
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(2) - Corrected for upstream diversions or changes in reservoir storage.

Gallatin Basin

Mountain snowpack* (inches)

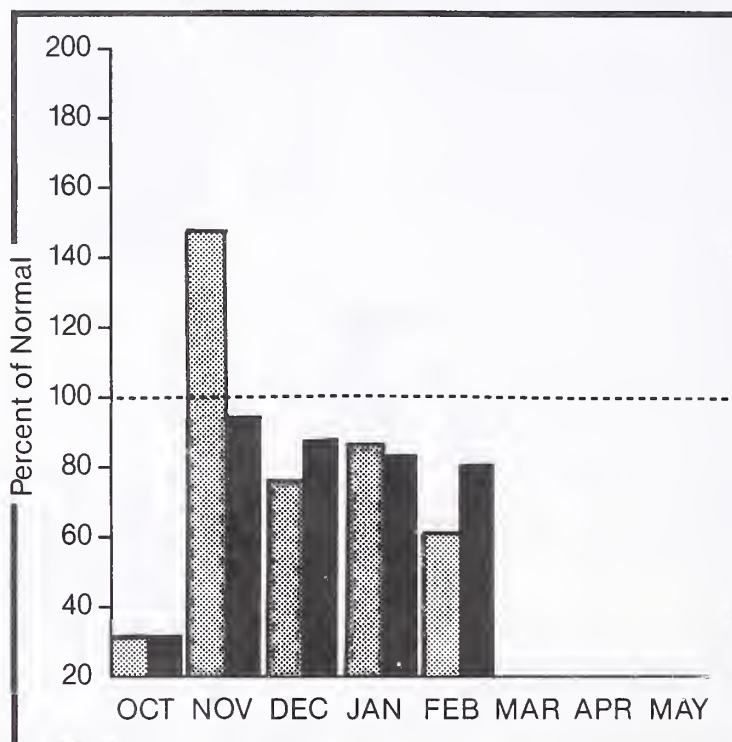


*Gallatin

Maximum —
Minimum —

Average - - -
Current ●—●

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

During February, mountain precipitation was about one-half of average. The snowpack remains below average over most of the basin. Snow in the headwaters near Yellowstone National Park is a little better than other parts of the drainage. Spring and summer streamflow forecasts are 5 to 10 percent less than those issued on February 1 and continue to predict below average runoff. However, forecasted flows are still much greater than last year's runoff.

For more information contact your local Soil Conservation Service Office.

GALLATIN RIVER BASIN

STREAMFLOW FORECASTS

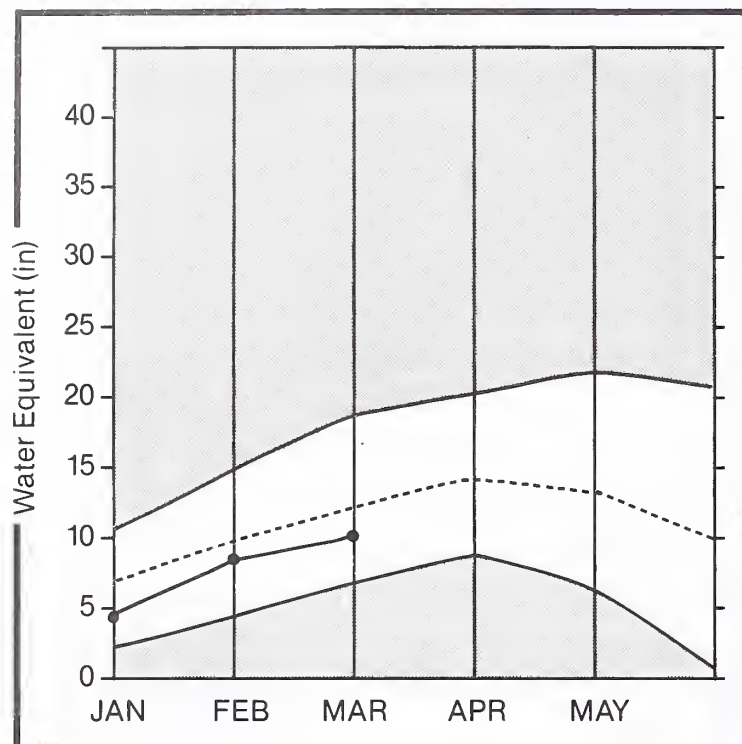
FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
GALLATIN RIVER near Gateway	APR-JUL	370	80	570	172	455	285	460
	APR-SEP	430	80	645	210	525	335	540
E & W FK. HYALITE CR. nr Bozeman 2	APR-JUL	19.8	83	29	11.2	25	14.8	24
	APR-SEP	23	82	34	12.6	29	17.1	28
HYALITE CREEK near Bozeman 2	APR-JUL	30	79	47	13.7	38	22	38
	APR-SEP	35	80	53	16.1	44	26	44
GALLATIN RIVER at Logan	APR-JUL	410	78	775	210	545	275	528
	APR-SEP	475	77	870	245	635	315	616

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVG.			
MIDDLE CREEK	8.0	4.0	5.4	3.6	UPPER GALLATIN	15	114 79
					EAST GALLATIN	13	111 79
					GALLATIN	25	114 81

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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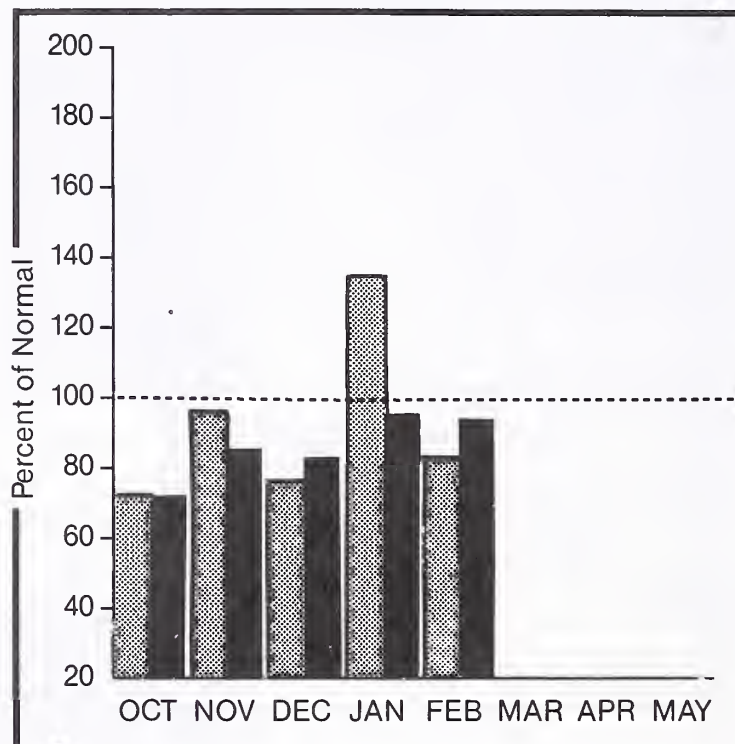
Missouri Basin

Mountain snowpack* (inches)



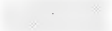
*Missouri Toston to Fort Peck

Precipitation* (percent of normal)



*Based on selected stations

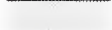
Maximum



Average



Minimum



Current



Monthly precipitation



Year to date precipitation



Water Supply Outlook

February precipitation was below average in the mountains. Snowpack levels remain below average in all drainages. Streamflow forecasts have decreased somewhat but are still in the below average range and generally indicate more water than was produced last year.

For more information contact your local Soil Conservation Service Office.

MISSOURI RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
MISSOURI RIVER at Toston 2	APR-JUL APR-SEP	1800 2100	80 81			2410 2800	1190 1400	2250 2590
PRICKLY PEAR CREEK nr Clancy	APR-JUL APR-SEP	21 25	81 81	37 43	5.7 7.6	31 37	10.9 12.9	26 31
SMITH RIVER nr Ft. Logan	APR-JUL APR-SEP	50 60	74 75	91 102	21 24	75 90	25 30	68 80
SHEEP CREEK nr White Sulphur Spgs.	APR-JUL APR-SEP	14.2 16.5	76 75	19.7 22	8.7 10.6	22 25	6.7 7.7	18.8 22
BELT CREEK near Monarch	APR-JUL APR-SEP	92 100	75 75	141 151	42 48	136 148	48 52	123 134
MISSOURI RIVER at Fort Benton 2	APR-JUL APR-SEP	2570 3130	74 78			4100 4890	1390 1770	3470 3990
MISSOURI RIVER at Virgelle 2	APR-JUL APR-SEP	3050 3580	77 80			4550 5290	1740 2100	3960 4500
MISSOURI RIVER near Landusky 2	APR-JUL APR-SEP	3360 3960	78 81			5080 5920	1940 2340	4310 4900
N.F. MUSSELSHELL near Delpine	APR-JUL APR-SEP	4.4 5.2	80 82	6.9 7.9	1.9 2.5	6.6 7.8	2.2 2.6	5.6 6.4
S.F. MUSSELSHELL above Martinsdale	APR-JUL APR-SEP	45 47	79 77	76 79	13.6 14.7	68 71	22 23	57 61
MISSOURI RIVER below Fort Peck 2	APR-JUL APR-SEP	3340 3850	79 80			5130 5870	1810 2120	4260 4800
LAKE SAKAKAWEA Inflow 2	APR-JUL APR-SEP	9240 10400	84 85			12900 14400	5830 6620	11000 12200

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
CANYON FERRY LAKE	2043.0	1267.0	1441.0	1563.0	MISSOURI HEADWATERS	117	131 94
HELENA VALLEY	9.2	4.6	4.9	4.7	WEST SIDE MISSOURI	11	115 88
LAKE HELENA	10.4	10.7	10.9	10.1	SMITH-BELT	11	123 84
HAUSER & HELENA	61.9	62.5	63.1	60.7	MISSOURI MAINSTEM	22	119 86
HOLTER LAKE	81.9	78.3	76.7	66.6	SUN-TETON-MARIAS	18	135 89
SMITH RIVER	10.6	1.5	3.3	7.2	JUDITH-MUSSELSHELL	17	115 82
NEULAN CREEK		NO REPORT			MISSOURI above FORT PECK	159	130 92
BAIR	7.0	0.6	2.0	4.5	MILK HEADWATERS	4	160 86
MARTINSDALE	23.1	0.2	4.3	10.0	BEAR PAW	7	102 78
DEADMAN'S BASIN	72.2	15.6	40.3	48.3	MILK RIVER	11	139 84
FORT PECK LAKE*	18.9	12.1	14.7	14.9	MISSOURI in MONTANA	168	130 92
					MISSOURI blw YELLOWSTONE	267	122 88

* Million Acre Feet

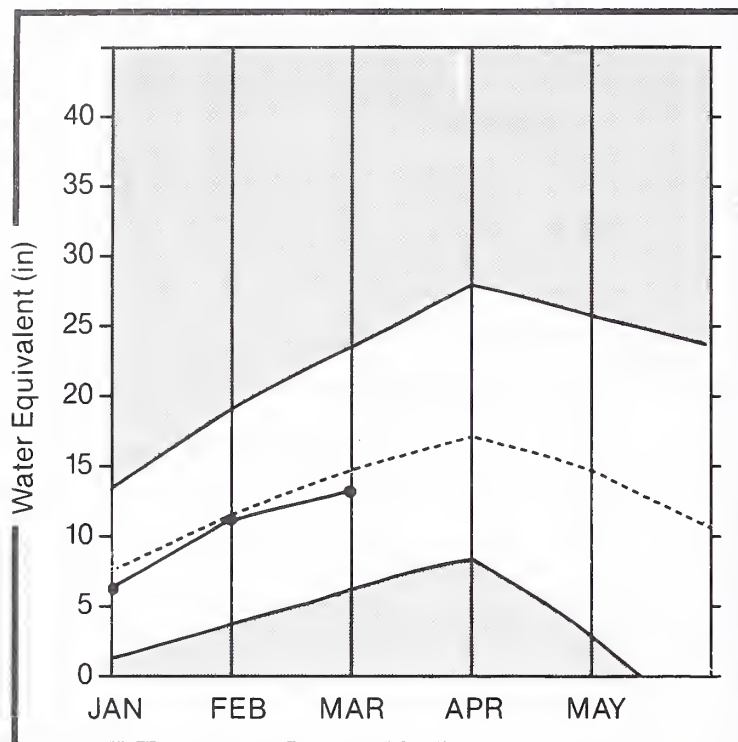
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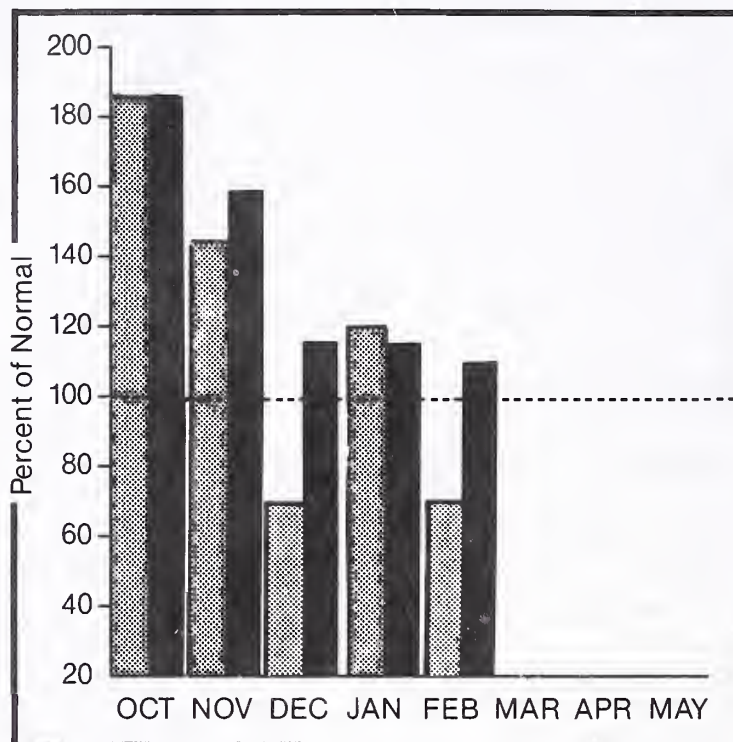
Sun, Teton and Marias Basins

Mountain snowpack* (inches)



*Sun-Teton-Marias

Precipitation* (percent of normal)



*Based on selected stations

Maximum —
Minimum —

Average - - -
Current ●—●

Monthly precipitation [light bar]

Year to date precipitation [dark bar]

Water Supply Outlook

Mountain precipitation was below average for February. Snowpack percentages decreased about 10 percent and are now below average except for near average snow near the Continental Divide. Spring and summer runoff forecasts decreased accordingly but still project runoff within 10 to 15 percent of average.

For more information contact your local Soil Conservation Service Office.

SUN-TETON-MARIAS RIVER BASINS

STREAMFLOW FORECASTS

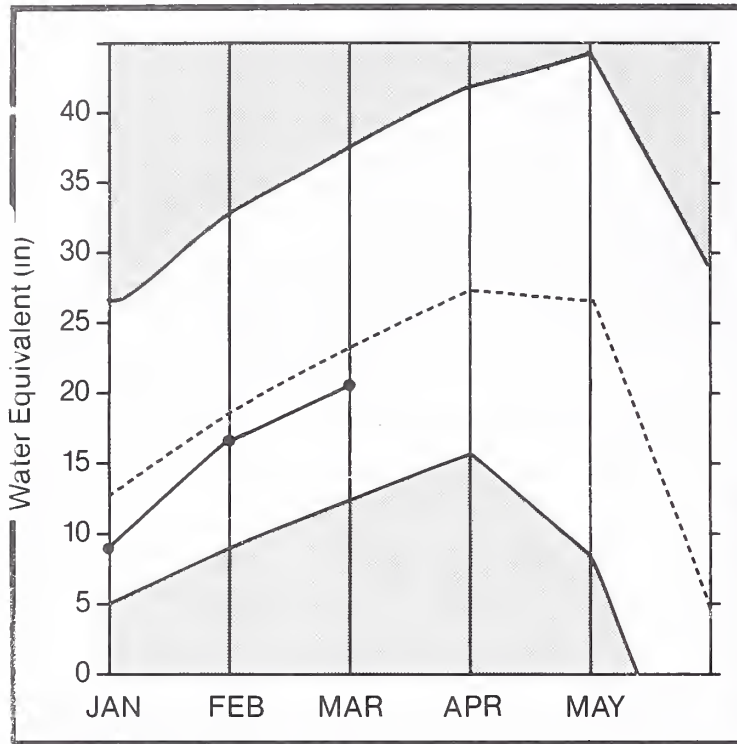
FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
SUN RIVER at Gibson Dam 2	APR-JUL APR-SEP	405 445	82 82	545 585	270 310	525 575	285 315	494 542
TWO MEDICINE CREEK near Browning 2	APR-JUL APR-SEP	196 205	88 87	270 280	127 137	275 285	116 125	222 235
BADGER CREEK near Browning	APR-JUL APR-SEP	98 114	92 93	128 146	68 82	137 156	59 72	107 123
SWIFT RESERVOIR Inflow nr Dupuyer	APR-JUL APR-SEP	66 77	94 94	86 98	46 57	91 105	41 49	70 82
CUT BANK CREEK at Cut Bank	APR-JUL APR-SEP	81 89	88 89	110 122	52 56	114 123	48 55	92 100
MARIAS RIVER near Shelby	APR-JUL APR-SEP	400 420	84 84			695 725	250 275	478 501

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE THIS YEAR	LAST YEAR	** AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
GIBSON	99.1	30.2	53.9	46.4	SUN-TETON	13	134 92
PISHKUN	32.0	19.4	18.1	18.1	MARIAS	6	137 87
WILLOW CREEK	32.2	23.1	24.3	20.3	SUN-TETON-MARIAS	18	135 89
LOWER TWO MEDICINE LAKE	11.9	11.9	10.3	8.0			
FOUR HORNS LAKE	19.2	14.0	13.7	12.3			
SWIFT	30.0	13.0	23.8	14.9			
LAKE FRANCES	112.0	41.8	93.5	68.5			
LAKE ELWELL (TIBER)	1347.0	641.7	675.0	555.2			

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St. Mary and Milk Basins

Mountain snowpack* (inches)



St. Mary

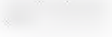
Maximum



Average



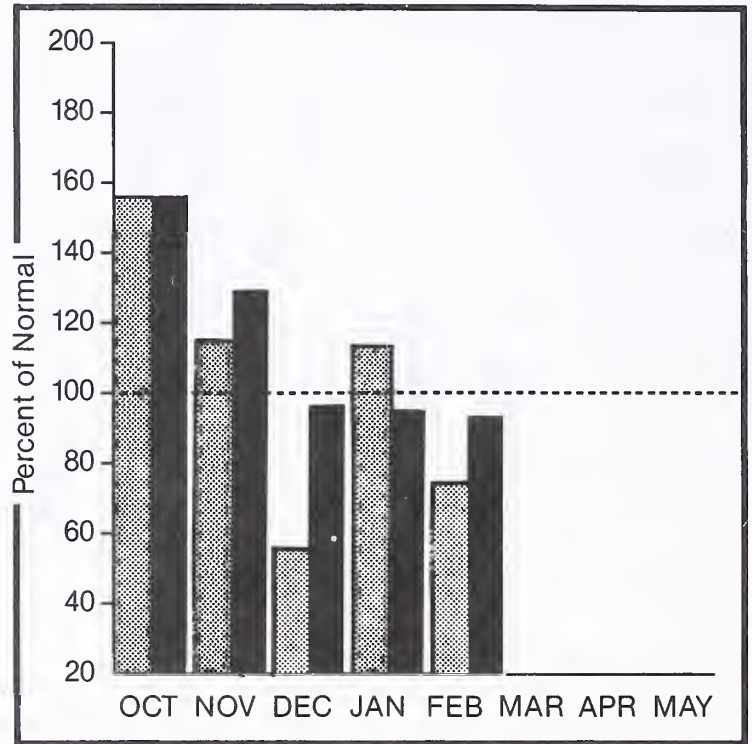
Minimum



Current



Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation



Year to date precipitation



Water Supply Outlook

February mountain precipitation was well below average. Snowpack in the Bow and Oldman River Drainages in Alberta remain average but is below average in Montana. Runoff forecasts have decreased and indicate below average runoff for the entire watershed. The natural flow of the Milk River, without the St. Mary Canal, is expected to produce only 65 percent of average runoff.

For more information contact your local Soil Conservation Service Office.

ST. MARY and MILK RIVER BASINS

STREAMFLOW FORECASTS

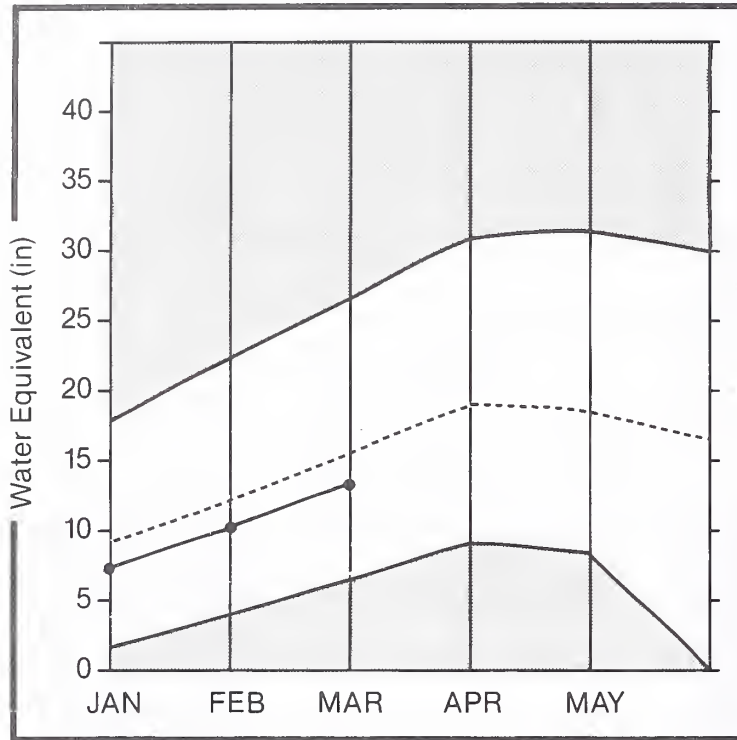
FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
SWIFTCURRENT CREEK at Sherburne 2	APR-JUL	96	87	113	82	120	72	110
	APR-SEP	114	89	131	100	142	86	128
ST. MARY RIVER near Babb 2	APR-JUL	345	85	415	275	410	280	404
	APR-SEP	405	85	475	340	480	330	474
MILK RIVER at Eastern Crossing	MAR-SEP	63	65			111	50	97
MILK RIVER at Eastern Crossing 2	MAR-SEP	250	93			295	220	270

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.	WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	% OF AVERAGE
LAKE SHERBURNE	64.3	30.0	38.9	24.1	MILK HEADWATERS	4	160	86
FRESNO	127.0	4.6	58.8	51.5	BEAR PAW	7	102	78
BEAVER CREEK	3.5	0.6	2.8	2.0	MILK RIVER	11	139	84
NELSON	66.8	3.0	42.5	36.0	ST. MARY	6	147	85
					ST. MARY and MILK	13	137	83
					BOW RIVER in ALBERTA	21	138	107
					OLDMAN RIVER in ALBERTA	8	163	111

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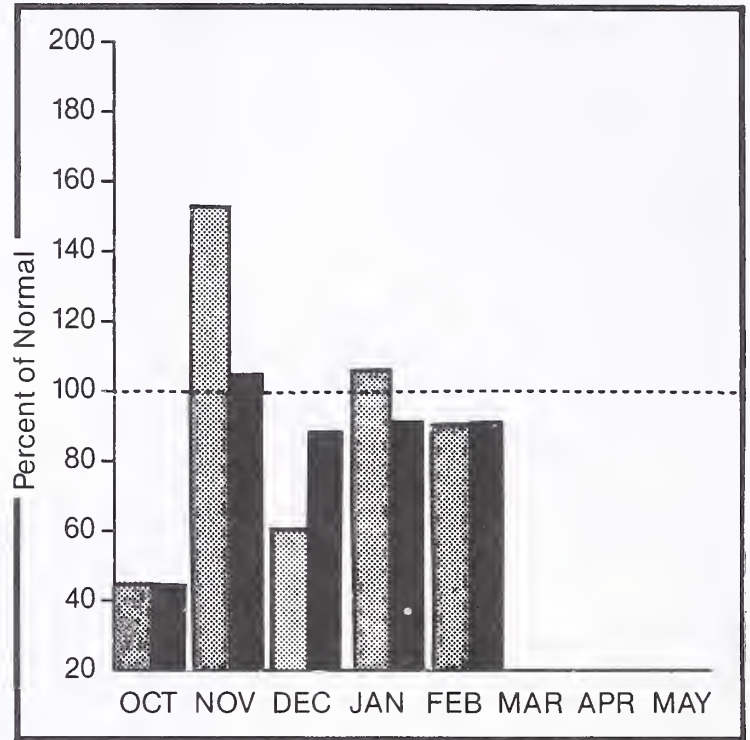
Yellowstone Basin

Mountain snowpack* (inches)



*Yellowstone above Big Horn

Precipitation* (percent of normal)



*Based on selected stations

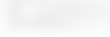
Maximum



Average



Minimum



Current



Monthly precipitation



Year to date precipitation



Water Supply Outlook

Mountain precipitation during February was about 90 percent of average. The snowpack remains a little below average throughout the basin with the best snowpacks found in the headwaters and Yellowstone National Park areas. The Tongue and Powder River watersheds have much below average snowpack. Spring and summer runoff forecasts remain unchanged from last month at a little below average. Below average flow is forecast from most tributaries downstream from Yellowstone National Park.

For more information contact your local Soil Conservation Service Office.

YELLOWSTONE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
YELLOWSTONE at Lake Outlet	APR-JUL APR-SEP	585 835	99 102	705 1000	460 670	680 965	490 705	590 818
YELLOWSTONE at Corwin Springs	APR-JUL APR-SEP	1600 1960	97 98	1980 2400	1220 1520	1860 2280	1340 1640	1650 2000
YELLOWSTONE near Livingston	APR-JUL APR-SEP	1820 2190	95 94	2260 2700	1400 1700	2130 2560	1510 1820	1920 2330
SHIELDS RIVER near Livingston	APR-JUL APR-SEP	120 134	80 80	210 230	30 40	165 184	75 84	150 167
BOULDER RIVER at Big Timber	APR-JUL APR-SEP	295 320	84 83	360 390	230 245	380 410	210 230	353 384
WEST ROSEBUD CREEK near Roscoe	APR-JUL APR-SEP	57 72	89 87	73 88	42 57	74 94	40 50	64 83
STILLWATER RIVER nr Absarokee 2	APR-JUL APR-SEP	485 580	93 93	620 730	350 430	655 780	315 380	524 625
CLARKS FORK RIVER near Belfry	APR-JUL APR-SEP	480 535	89 89	615 700	345 380	640 715	320 355	540 603
COONEY RESERVOIR Inflow	APR-JUL APR-SEP	40 49	82 82	65 78	15.0 20	56 68	24 30	49 60
YELLOWSTONE RIVER at Billings 2	APR-JUL APR-SEP	3330 3920	89 89			4080 4850	2540 3040	3740 4410
YELLOWSTONE RIVER at Miles City 2	APR-JUL APR-SEP	5000 5820	89 89			6470 7450	3650 4190	5640 6510
YELLOWSTONE RIVER near Sidney 2	APR-JUL APR-SEP	5460 6280	87 87			7150 8220	3770 4340	6260 7200

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE	
		THIS YEAR	LAST YEAR	AVG.				
MYSTIC LAKE	21.0	2.2	1.7	6.5	YELLOWSTONE ab LIVINGSTON	25	130	87
COONEY	27.4	19.9	21.5	14.5	SHIELDS	10	129	87
BIGHORN LAKE	1356.0	660.9	835.4	660.0	BOULDER-STILLWATER	6	110	83
TONGUE RIVER	68.0	36.9	23.2	30.7	CLARK'S FORK-ROCK CREEK	20	128	87
					YELLOWSTONE above BIGHORN	48	125	85
					LITTLE BIGHORN	5	86	72
					WIND RIVER (Wyoming)	29	101	85
					BIGHORN RIVER (Wyoming)	33	101	74
					BIGHORN BASIN (Total)	57	102	79
					TONGUE RIVER (Wyoming)	15	78	64
					POWDER RIVER (Wyoming)	15	80	61
					YELLOWSTONE RIVER	114	108	80

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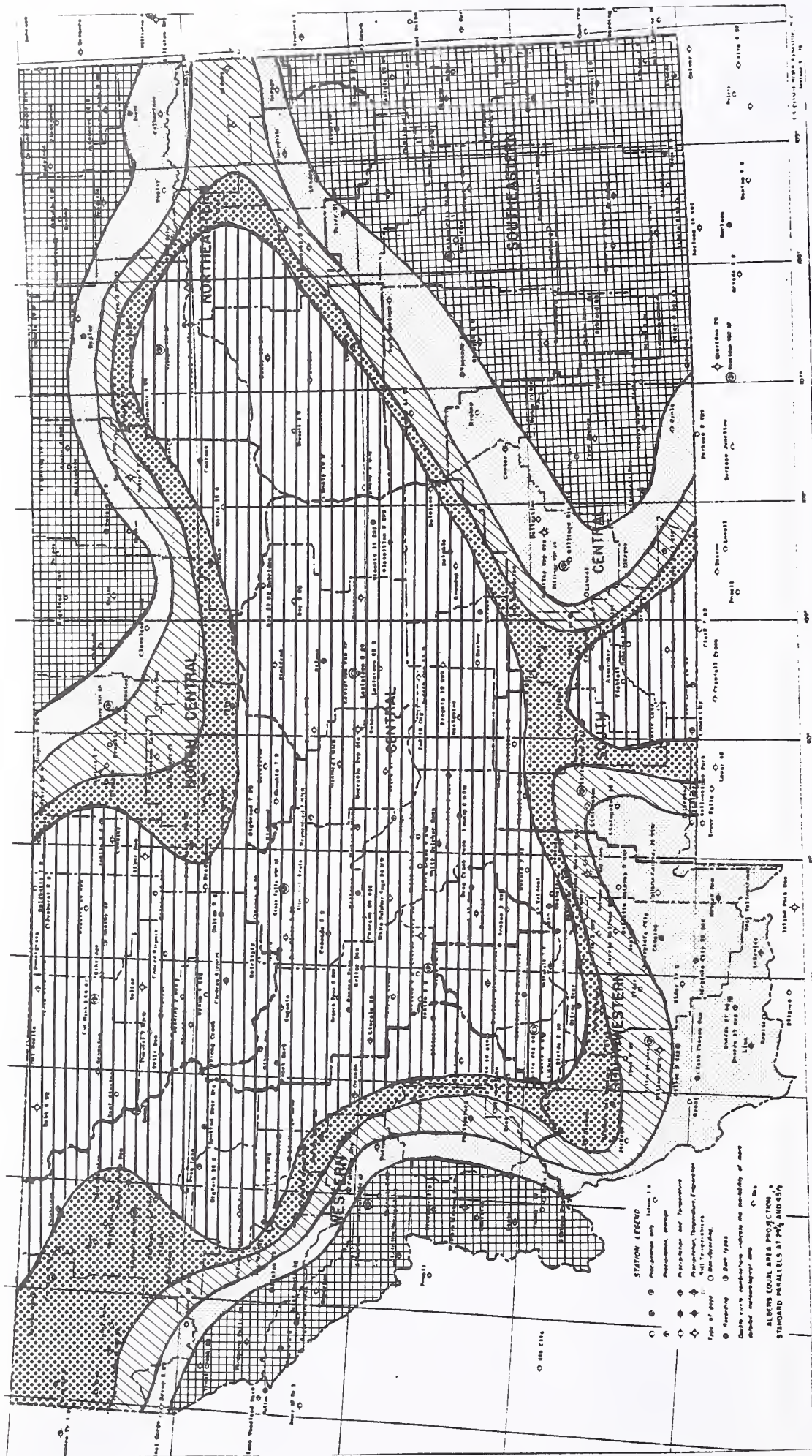
Snow Data Measurements

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
MONTANA							CREVICE MOUNTAIN	8400	2/28/89	38	8.6	5.8	9.3
ABUNOANCE LAKE	8800	2/25/89	50	13.8	12.6	17.6	CRYSTAL LAKE	6050	2/23/89	34	8.6	8.6	11.8
AMBROSE	6480	2/28/89	42	10.2	9.8	11.3	CRYSTAL LAKE PILLOW	6050	3/01/89	---	8.7	9.7	11.7
ARCH FALLS	7350	2/27/89	33	7.6	7.9	10.1	DAO CREEK LAKE	8400	3/01/89	38	10.4	8.0	11.2
ASHLEY DIVIOE	4820	2/26/89	26	5.6	5.0	6.2	DAISY PEAK	7600	2/24/89	31	7.5	5.6	9.6
BADGER PASS PILLOW	6900	3/01/89	---	26.9	20.2	29.5	DALY CREEK	5780	2/27/89	37	8.0	8.7	10.0
BADGER PASS	6900	2/25/89	77	28.8	22.2	33.7	DALY CREEK PILLOW	5780	3/01/89	---	8.1	7.8	9.5
BALO EAGLE PEAK	5700	2/23/89	120	42.9E	34.8	53.5	DARKHORSE LK. PILLOW	8700	3/01/89	---	16.2	14.7	20.7
BALO RIOGE	7500	3/03/89	51	11.2	7.6	10.9	DARKHORSE LAKE	8600	2/25/89	56	18.4	16.6	23.5
BANFIELD MTN PILLOW	5600	3/01/89	---	14.3	10.8	18.1	DAVIS CREEK	5400	2/23/89	58	18.4	14.0	20.9
BANFIELD MOUNTAIN	5600	2/24/89	47	14.4	10.8	20.8	DEADMAN CR PILLOW	6450	3/01/89	---	7.8	7.3	9.2
BAREE CREEK	5500	2/24/89	85	30.1	24.2	41.0	DEADMAN CREEK	6450	2/24/89	33	9.0	7.6	10.1
BAREE MIDWAY	4600	2/24/89	75	25.6	21.3	31.9	DESERT MOUNTAIN	5600	2/23/89	38	10.5	7.9	13.8
BAREE TRAIL	3800	2/24/89	28	7.2	5.6	8.8	DEVILS SLIOE	8100	2/27/89	49	12.9	11.8	18.5
BARKER LAKE5 PILLOW	8250	3/01/89	---	10.1	8.0	12.7	DISCOVERY BASIN	7050	2/24/89	33	8.2	6.4	9.1
BASIN CREEK	7180	2/23/89	28	5.8	4.1	7.0	DIVIOE	7800	2/26/89	39	10.6	7.2	9.5
BASIN CREEK PILLOW	7180	3/01/89	---	4.9	3.6	6.9	DIVIOE PILLOW	7800	3/01/89	---	9.0	6.1	10.0
BAS5000 PEAK	5150	2/24/89	35	8.6	6.1	10.5	DIX HILL	6400	2/27/89	35	9.9	9.5	11.1
BEAGLE SPRINGS	8850	3/01/89	29	6.9	6.9	7.5	DUPUYER CREEK PILLOW	5750	3/01/89	---	11.8	7.4	11.2
BEAGLE SPGS PILLOW	8850	3/01/89	---	5.7	4.8	6.9	EAST FORK R.S.	5400	2/26/89	22	2.8	6.9	6.2
BEAR BASIN	8150	2/23/89	48	13.0	14.1	18.2	EL DORADO MINE	7800	2/27/89	57	13.6	12.3	17.4
BEAR PAW SKI AREA	5200	2/25/89	22	4.9	5.5	6.6	ELK HORN SPRINGS	7800	2/25/89	34	8.2	6.6	8.1
BEAVER CREEK PILLOW	7850	3/01/89	---	13.3	10.7	15.8	ELK PEAK	8000	2/28/89	47	11.0	8.2	14.0
BERRY MEADOW	7000	2/27/89	28	6.5	5.4	6.8	EMERY CREEK	4350	2/23/89	41	12.0	9.6	14.9
BIG CREEK	6750	3/04/89	102	37.2	24.0	38.2	EMERY CREEK PILLOW	4350	3/01/89	---	10.9	9.3	14.4
BIG SKY	7700	3/01/89	47	7.9	11.0	13.2	FATTY CREEK	5500	3/04/89	75	20.0	13.5	20.6
BIG SKY MEADOW	6350	2/23/89	32	7.8	5.6	8.5	FISH CREEK	8000	2/23/89	29	6.4	4.2	8.1
BIG SNOWY	7150	2/23/89	42	11.4	11.8	18.2	FISHER CREEK PILLOW	9100	3/01/89	---	26.4	21.6	30.9
BLACK BEAR	7950	2/23/89	102	38.6	29.7	35.0	FISHER CREEK	9100	2/27/89	82	28.8	22.8	32.7
BLACK BEAR PILLOW	7950	3/01/89	---	35.8	25.4	31.8	FIVE-BULL	5700	2/25/89	22	5.6	3.1	6.0
BLACK PINE PILLOW	7100	3/01/89	---	9.6	9.3	12.1	FLATTOP MTN PILLOW	6300	3/01/89	---	33.5	25.2	40.7
BLACK PINE	7100	2/24/89	34	9.6	8.6	11.8	FLEECER RIOGE	7500	2/23/89	38	9.3	6.8	9.3
BLACKTAIL	5650	2/25/89	46	13.9	7.8	---	FOOLHEN	8280	2/25/89	44	11.3	9.8	14.4
BL000Y OICK PILLOW	7550	3/01/89	---	9.0	8.1	10.9	FOUR MILE	6900	2/27/89	30	7.6	5.2	7.3
BL000Y OICK	7600	2/25/89	35	9.4	9.0	11.8	FOURTH OF JULY	3450	2/27/89	30	6.9	7.2	8.5
BLUE LAKE	5900	2/25/89	57	20.1	14.7	22.6	FRED BURR PASS	8000	3/01/89	66	16.4	15.3	21.3
B0T5 S0T5	7750	3/01/89	28	5.5	5.6	6.3	FREIGHT CREEK	6000	2/25/89	42	12.2	9.2	13.2
BOULOER MOUNTAIN	7950	2/23/89	44	12.8	11.2	16.5	FRI0AY HILL	4620	2/27/89	52	14.6	10.7	18.7
BOULOER MTN PILLOW	7950	3/01/89	---	15.2	11.8	17.9	FROHNER MEADOWS	6480	2/27/89	28	6.4	5.2	7.2
BOX CANYON	6670	2/25/89	32	8.4	10.0	10.5	FROHNER MOWS PILLOW	6480	3/01/89	---	6.1	4.4	7.9
BOX CANYON PILLOW	6700	3/01/89	---	7.2	6.7	8.4	GARVER CREEK PILLOW	4250	2/23/89	---	8.0	5.8	9.3
BOXELOER CREEK	5100	2/25/89	28	5.5	5.6	7.5	GARVER CREEK	4250	2/23/89	35	9.8	6.1	10.1
BRANHAM LAKES	8850	2/23/89	69	22.0	17.7	25.0	GIBBONS PASS	7100	2/27/89	59	18.8	15.6	20.5
BRI0GER BOWL PILLOW	7250	2/28/89	---	16.4	13.6	21.7	GOAT MOUNTAIN	7000	2/27/89	33	8.6	6.5	9.4
BRI0GER BOWL	7250	2/28/89	78	20.8	14.6	22.6	GOLD CREEK LAKE	7200	2/27/89	43	10.6	10.2	12.9
BRI5TOW CREEK	3900	2/24/89	28	7.2	5.4	10.5	GOLD STONE	8100	2/25/89	41	11.7	10.3	14.9
BRUSH CREEK TIMBER	5000	2/27/89	31	6.3	4.4	9.0	GRASSHOPPER	7000	2/28/89	26	5.2	2.8	5.0
BULL MOUNTAIN	6600	2/23/89	25	6.0	3.6	5.1	GRAVE CRK PILLOW	4300	3/01/89	---	14.0	9.0	16.0
CABIN CREEK	5200	2/26/89	25	6.6	5.0	6.0	GRAVE CREEK	4300	2/23/89	44	14.2	9.1	16.2
CALL ROAD	8050	2/26/89	38	9.7	6.4	9.8	GRIFFIN CR DIVIOE	5150	2/23/89	35	8.7	6.4	10.5
CALVERT CREEK	6430	3/01/89	39	9.4	7.2	10.2	GUN5IGHT LAKE	6300	2/24/89	83	30.6	28.1	35.7
CALVERT CR PILLOW	6430	3/01/89	---	7.2	6.0	8.4	HANO CREEK	5030	2/27/89	40	9.0	6.8	12.1
CAMP MISERY	6400	2/23/89	109	40.2	28.1	42.2	HANO CREEK PILLOW	5030	3/01/89	---	9.7	6.2	11.8
CAMP SENIA	7890	3/01/89	21	3.7	3.1	4.8	HAWKINS LAKE PILLOW	6450	3/01/89	---	19.8	14.9	24.3
CARROT BASIN PILLOW	9000	3/01/89	---	20.2	14.4	23.3	HAWKINS LAKE	6450	2/23/89	63	21.9	17.9	26.3
CARROT BASIN	9000	2/27/89	76	25.8	18.8	30.6	HEART LAKE TRAIL	4800	2/25/89	56	18.0	15.2	19.5
CARTER CREEK	7400	3/02/89	22	4.5	---	3.9	HEBGEN DAM	6550	2/22/89	44	11.6	7.4	11.1
CASHE CREEK PILLOW	7800	3/01/89	---	9.0	7.4	7.9	HELL ROARING DIVIOE	5770	2/28/89	74	24.9	16.4	27.4
CE0AR GROVE	3760	2/23/89	45	11.2	8.6	11.1	HERRIG JUNCTION	4850	2/23/89	64	21.5	15.6	24.3
CHE55MAN RESERVOIR	6200	2/27/89	19	4.4	3.0	3.4	HOLBROOK	4530	3/01/89	31	8.1	6.6	9.1
CHICKEN CREEK	4060	2/23/89	47	15.3	11.9	14.5	H000 MEADOW	6600	2/27/89	32	6.9	7.0	9.0
CLOVER MOW PILLOW	8800	3/01/89	---	11.2	9.5	14.7	H00000 BASIN PILLOW	6050	3/01/89	---	32.2	27.6	41.4
CLOVER MEADOW	8600	2/26/89	41	11.0	9.0	14.4	H00000 BASIN	6050	2/25/89	95	35.4	33.0	43.9
COLE CREEK	7850	2/28/89	50	10.5	6.0	13.7	H00000 CREEK	5900	2/25/89	88	31.6	28.9	40.7
COLE CREEK PILLOW	7850	3/01/89	---	9.4	7.0	14.2	IN0EPENDENCE	7850	2/25/89	45	12.4	12.0	16.0
COLLEY CREEK	6300	2/27/89	26	5.6	5.2	7.3	INTERGAARO	6450	2/23/89	26	6.0	5.8	7.1
COMBINATION	5600	2/24/89	20	4.2	3.6	5.0	JAHNKE LAKE TRAIL	7200	2/23/89	31	8.1	6.6	8.8
COMBINATION PILLOW	5600	3/01/89	---	5.3	4.7	5.2	JOHNSON PARK	6450	2/24/89	25	6.4	5.6	6.6
COOKE STATION	8150	2/27/89	58	18.0	12.0	17.1	KEELER CREEK	3300	2/24/89	44	13.6	9.4	13.6
COPPER BOTTOM	5200	2/25/89	39	10.8	9.5	10.6	KINGS HILL	7500	2/24/89	35	9.6	9.4	11.9
COPPER BOTTOM PILLOW	5200	3/01/89	---	10.9	8.7	11.9	KISHENEHN	3890	2/25/89	27	6.0	4.2	7.9
COPPER CAMP PILLOW	6950	3/01/89	---	23.8	19.6	30.6	KI0WANI5 CAMP	3720	2/25/89	8	1.2	1.2	2.0
COPPER CAMP	6950	2/25/89	66	22.8	20.6	27.1	KRAFT CREEK PILLOW	4750	3/01/89	---	16.3	9.6	11.1
COPPER CREEK	5700	2/25/89	42	12.3	10.6	13.8	LAKE CREEK	6100	2/26/89	32	7.8	4.0	7.7
COPPER MOUNTAIN	7700	2/22/89	34	8.5	6.0	9.6	LAKEVIEW CANYON	6930	2/23/89	39	9.8	4.1	10.0
COTTONWOOD CREEK	6400	3/03/89	32	6.2	5.0	6.9	LAKEVIEW ROG. PILLOW	7400	3/01/89	---	11.1	5.8	11.2
COYOTE HILL	4200	3/01/89	45	11.0	8.0	9.7	LAKEVIEW RIOGE	7400	2/23/89	37	9.4	4.2	9.1
							LEMHI PASS	7480	2/25/89	30	7.1	6.3	7.7
							LEMHI RIOGE	8100	2/25/89	33	8.4	7.0	8.7

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
LEMHI RIDGE PILLOW	8100	3/01/89	---	7.6	6.6	9.2
LICK CREEK PILLOW	6860	3/01/89	---	8.2	6.6	8.4
LICK CREEK	6860	2/27/89	33	7.1	7.6	8.5
LITTLE PARK	7400	2/23/89	43	10.7	10.4	14.0
LOGAN CREEK	4300	2/27/89	31	5.8	4.0	7.0
LONE MOUNTAIN	8880	3/01/89	58	13.8	13.2	19.6
LOST HORSE	5940	2/26/89	72	23.9	23.7	28.7
LOST SOUL	4800	2/24/89	41	11.9	9.1	14.6
LOWER TWIN PILLOW	7900	3/01/89	---	14.3	9.9	16.8
LOWER TWIN	7900	2/27/89	53	17.0	14.8	18.3
LUBRECHT FLUME	4680	3/02/89	29	6.3	4.6	5.5
LUBRECHT PILLOW	4680	3/01/89	---	7.3	5.1	5.5
LUBRECHT FOREST NO 3	5450	3/02/89	34	7.5	5.0	6.5
LUBRECHT FOREST NO 4	4650	3/02/89	18	3.6	2.7	3.3
LUBRECHT FOREST NO 6	4040	3/01/89	20	4.1	3.6	3.9
LUBRECHT HYDROPLT	4200	3/02/89	27	6.4	5.0	6.8
MADISON PLT PILLOW	7750	3/01/89	---	24.2	15.3	20.6
MAISON PLATEAU	7750	2/23/89	72	25.7	16.7	19.3
MANY GLACIER	4900	2/23/89	49	16.0	10.4	18.5
MANY GLACIER PILLOW	4900	3/01/89	---	16.3	8.3	16.7
MARIAS PASS	5250	2/26/89	39	12.3	7.4	15.5
MAYNARD CREEK	6210	2/28/89	51	11.3	10.5	13.2
MAYNARD CR PILLOW	6210	2/28/89	---	9.4	6.9	9.6
MIDDLE MILL CREEK	7850	2/23/89	45	12.6	11.7	14.2
MILL CREEK	7500	2/27/89	35	8.1	7.8	11.0
MINERAL CREEK	4000	2/24/89	45	13.8	10.4	16.3
MONUMENT PK PILLOW	8850	3/01/89	---	13.6	11.7	17.8
MONUMENT PEAK	8850	2/25/89	56	17.5	14.8	22.9
MOSS PEAK	6780	3/04/89	100	35.8	23.5	--
MOSS PEAK PILLOW	6780	3/01/89	---	29.0	20.2	34.4
MOULTON RESERVOIR	6850	2/28/89	32	6.0	4.7	5.7
MT LOCKHART PILLOW	6400	3/01/89	---	15.9	13.3	18.1
MOUNT LOCKHART	6400	3/01/89	62	19.6	14.0	20.0
MUOD LAKE	7650	3/01/89	56	15.0	13.2	17.6
MULE CREEK	8300	2/28/89	42	11.3	10.2	12.7
MULE CREEK PILLOW	8300	3/01/89	---	11.3	10.1	11.4
NEVAOA CREEK	6480	2/25/89	35	9.8	10.5	11.6
NEVAOA CREEK PILLOW	6480	3/01/89	---	12.0	9.3	11.4
NEW WORLD	6900	2/24/89	33	9.0	10.4	12.5
NEWTON MOUNTAIN	5600	2/27/89	74	24.1	17.0	31.4
NEZ PERCE CMP PILLOW	5650	3/01/89	---	12.7	11.9	13.2
NEZ PERCE CAMP	5650	2/26/89	45	12.4	13.4	13.5
NEZ PERCE CREEK	6600	2/22/89	23	4.8	3.4	6.2
NEZ PERCE PASS	6570	2/26/89	48	14.4	13.6	15.0
NOISY BASIN	6040	2/23/89	103	37.2	26.4	37.8
NOISY BASIN PILLOW	6040	3/01/89	---	33.2	22.7	33.4
N.F. ELK CR PILLOW	6250	3/01/89	---	10.1	8.2	11.2
N.F. ELK CREEK	6250	3/05/89	42	11.4	7.9	10.5
NORTH FORK JOCKO	6330	3/04/89	113	41.3	24.6	39.4
NORTH MEADOW	7500	2/27/89	27	6.6	4.4	7.0
N.E. ENTRANCE PILLOW	7350	3/01/89	---	7.3	5.7	8.2
NORTHEAST ENTRANCE	7350	3/01/89	35	8.1	4.6	8.4
NOTCH	8500	2/26/89	39	10.5	7.0	13.2
OPHIR PARK	7150	2/26/89	46	13.8	12.2	15.0
PETERSON MDW PILLOW	7200	3/01/89	---	6.9	6.0	9.0
PETERSON MEADOWS	7200	2/28/89	35	7.8	6.5	8.5
PICKFOOT CREEK	6650	2/23/89	31	8.3	5.7	9.9
PICKFOOT CRK PILLOW	6650	3/01/89	---	8.7	6.0	9.4
PIKE CREEK PILLOW	5930	3/01/89	---	19.3	13.8	23.6
PIPESTONE PASS	7200	2/22/89	21	4.6	2.5	4.2
PLACER BASIN PILLOW	8830	3/01/89	---	14.6	11.7	13.6
POORMAN CREEK	5100	2/23/89	72	24.4	18.8	30.8
PORCUPINE PILLOW	6500	3/01/89	---	5.1	4.1	6.5
PORCUPINE	6500	3/03/89	37	7.4	4.0	6.5
POTOMAGETON PARK	7150	2/28/89	46	11.7	10.6	13.0
RED MOUNTAIN	6000	2/24/89	49	13.2	8.5	16.7
RED TOP	5260	2/27/89	64	19.1	13.6	25.5
ROCK CREEK	5600	2/23/89	33	9.3	9.0	8.6
ROCK CREEK MEADOW	8160	2/29/89	57	14.0	12.2	17.9
ROCKER PEAK	8000	2/27/89	40	9.9	9.8	12.6
ROCKER PEAK PILLOW	8000	3/01/89	---	8.7	8.1	12.5
ROCKY BOY	4700	2/25/89	16	2.8	3.2	4.2
ROCKY BOY PILLOW	4700	2/25/89	---	4.2	4.0	5.2
SACAJAWEA	6550	2/28/89	52	11.4	8.3	12.5
SADDLE MTN PILLOW	7900	3/01/89	---	19.7	16.9	22.6
SADDLE MOUNTAIN	7940	2/27/89	64	20.8	16.8	22.0
SENTINEL CREEK	8300	2/28/89	62	18.5	15.2	20.1
SHORT CREEK	7000	2/23/89	21	4.5	3.2	--
SHOWER FALLS	8100	2/27/89	52	13.5	13.0	19.6
SHOWER FALLS PILLOW	8100	3/01/89	---	12.4	14.0	20.3
SILVER RUN	6630	2/28/89	17	3.1	2.1	5.0
SILVER RUN PILLOW	6630	3/01/89	---	4.3	3.7	5.4

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
SKALKAHO PILLOW	7260	3/01/89	---	16.9	16.1	21.1
SKALKAHO SUMMIT	7250	2/27/89	64	16.4	18.2	22.7
SKYLARK TRAIL PILLOW	6200	3/01/89	---	28.4	24.7	27.9
SLAG-A-MELT LAKE	8750	2/25/89	58	18.2	13.2	22.5
SLIOE ROCK MOUNTAIN	7100	2/28/89	50	12.4	10.3	13.8
SMUGGLER MINE	6960	2/23/89	34	9.1	7.6	8.6
S.F. SHIELDS PILLOW	8100	3/01/89	---	12.1	10.3	15.1
S.F. SHIELDS	8100	3/01/89	68	16.4	14.6	20.6
SPOTTED BEAR MTN.	7000	2/24/89	41	12.6	9.8	13.7
SPUR PARK PILLOW	8100	3/01/89	---	15.9	13.6	19.0
SPUR PARK	8100	2/24/89	48	14.5	12.5	18.1
STAHL PEAK	6030	2/23/89	84	29.9	19.3	34.8
STAHL PEAK PILLOW	6030	3/01/89	---	27.6	16.7	31.7
STEMPLE PASS	6600	2/26/89	34	8.6	6.4	8.8
STORM LAKE	7780	2/28/89	44	10.2	8.6	11.0
STRYKER BASIN	6180	2/23/89	74	25.5	15.9	28.9
STUART MILL	6500	2/23/89	25	5.6	4.7	5.8
STUART MOUNTAIN	7400	3/04/89	83	27.9	20.4	28.1
SUCKER CREEK	3960	2/25/89	7	.6	.0	.4
TAYLOR ROAD	4080	2/25/89	16	3.6	2.8	3.4
TEN MILE LOWER	6600	2/27/89	29	6.3	5.4	6.5
TEN MILE MIDDLE	6800	2/27/89	36	8.6	7.5	9.7
TEN MILE UPPER	8000	2/23/89	38	10.4	9.7	11.8
TEPEE CREEK PILLOW	8000	3/01/89	---	10.4	7.6	11.5
TEPEE CREEK	8000	2/26/89	45	12.8	8.3	12.9
TIMBERLINE CREEK	8850	3/01/89	38	9.0	8.2	11.8
TRAIL CREEK	7090	2/25/89	29	7.1	5.2	7.0
TRINKUS LAKE	6100	2/24/89	93	34.1	28.7	37.9
TRUMAN CREEK	4060	3/08/89	26	7.0	2.6	3.8
TV MOUNTAIN	6800	3/04/89	54	15.3	12.4	16.3
TWELVEMILE PILLOW	5600	3/01/89	---	16.0	13.8	17.0
TWELVEMILE CREEK	5600	2/26/89	57	18.5	19.1	20.3
TWENTY-ONE MILE	7150	2/26/89	48	14.8	10.7	15.5
TWIN CREEKS	3580	2/24/89	30	9.5	8.6	11.2
TWIN LAKES PILLOW	6400	3/01/89	---	31.4	28.6	36.9
TWIN LAKES	6510	2/26/89	85	30.6	28.1	36.5
UPPER HOLLAND LAKE	6200	2/25/89	77	27.6	24.5	31.4
WALDRON PILLOW	5600	3/01/89	---	9.7	7.4	9.4
WALDRON	5600	3/01/89	36	8.6	5.4	9.2
WARM SPRINGS	7800	3/01/89	58	14.3	12.0	19.9
WARM SPRINGS PILLOW	7800	3/01/89	---	14.0	12.5	22.7
WEASEL OIVIOE	5450	2/23/89	75	26.8	18.0	30.5
WEST YELLOWSTONE	6700	2/26/89	39	10.4	6.4	10.7
WHISKEY CREEK PILLOW	6800	3/01/89	---	16.2	10.3	14.6
WHISKEY CREEK	6800	2/23/89	67	22.5	11.6	17.7
WHITE MILL PILLOW	8700	3/01/89	---	18.1	13.4	21.7
WHITE MILL	8700	2/27/89	70	23.2	17.2	23.9
WHITE PINE RIOGE	8850	2/26/89	22	4.6	3.7	4.5
WILLOW CREEK	6500	2/28/89	34	6.0	4.1	7.4
WOOD CREEK	5960	2/25/89	32	8.8	6.5	9.1
WOOD CREEK PILLOW	5960	3/01/89	---	8.3	5.9	9.5
WRONG CREEK	5700	2/24/89	36	8.8	8.6	12.5
WRONG RIDGE	6800	2/25/89	47	14.1	11.4	17.0

Valley Precipitation



- Over 130%
- 110 - 130%
- 90 - 110%
- 70 - 90%
- Under 70%

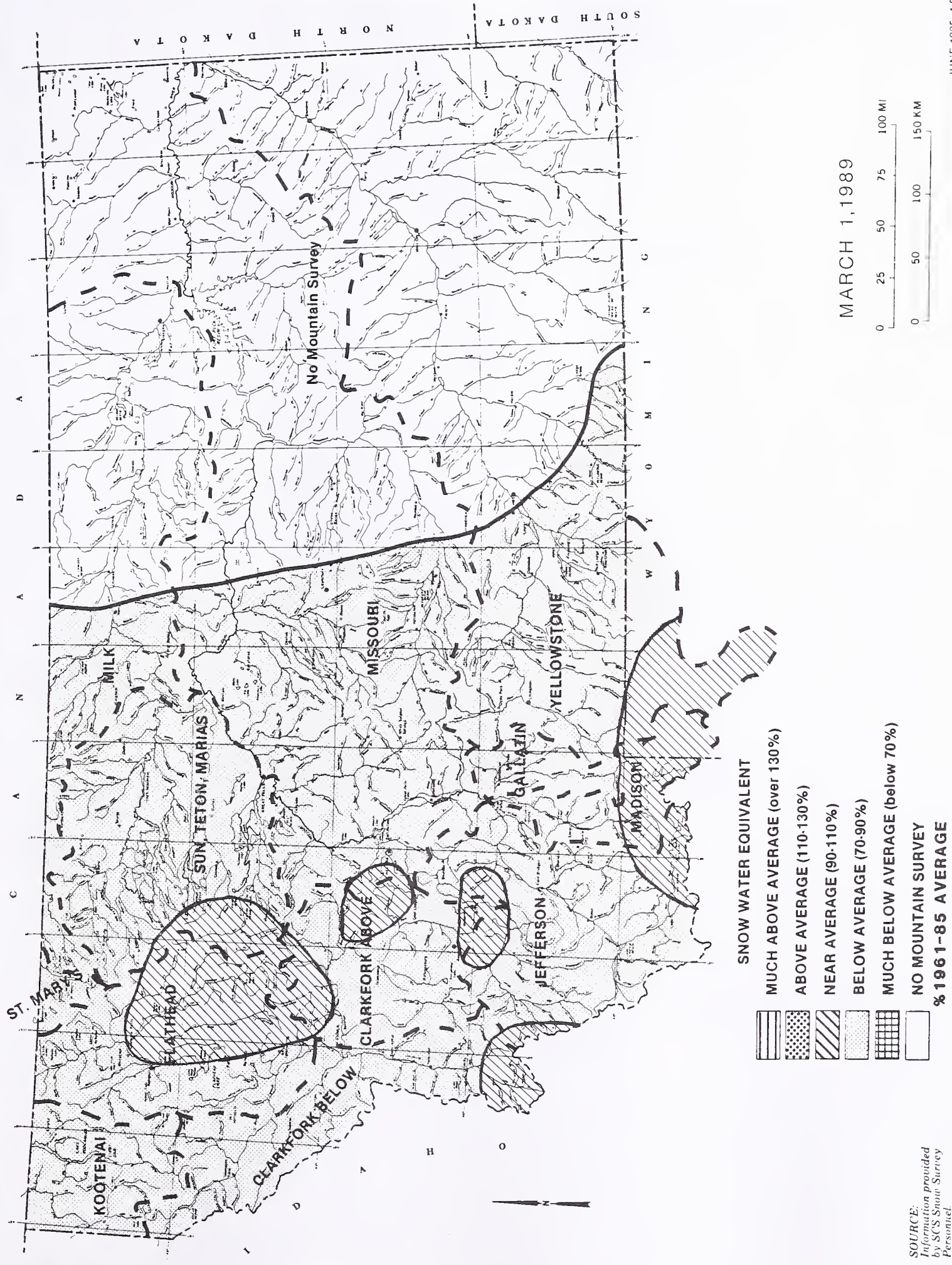
Source: NWS
Great Falls, MT

FEBRUARY 1989

MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA

SOIL CONSERVATION SERVICE

U.S. DEPARTMENT OF AGRICULTURE



The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canadian

Department of the Environment
Atmospheric Environment Service
Water Management Service
British Columbia Ministry of Environment
Inventory and Engineering Branch, Hydrology Section
Alberta Environment
Technical Services Division

Federal

U.S. Department of Agriculture
Forest Service
U.S. Department of the Army
Corps of Engineers
U.S. Department of Commerce
NOAA, National Weather Service
National Environmental Satellite Service
U.S. Department of the Interior
Bureau of Indian Affairs
Fish and Wildlife Service
Geological Survey
National Park Service
Bureau of Reclamation
U.S. Department of Energy
Bonneville Power Administration

State

Montana Conservation Districts
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of State Lands
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

Private

Big Sky of Montana
Butte Water Company
Confederated Salish & Kootenai Tribes
Flathead Valley Community College
Montana Power Company
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports.

Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

SNOW SURVEY UNIT

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